RECOMMENDATIONS FOR VERSION 6

Joel Susskind

NASA GSFC Sounder Research Team

AIRS Science Team Meeting

March 28, 2007

My Plans for Version 6

* Higher spatial resolution soundings

* Improved OLR algorithm (Larrabee Strow)

  Improved error estimates

  Add capability to trace constituents, rejected cases

  Improved surface parameter retrieval methodology

  Reoptimize channel sets, functions, damping for physical retrievals

  T_s, $T(p)$, $q(p)$, $O_3(p)$

  Improve robustness of cloud parameter retrievals

Higher Spatial Resolution Soundings

Requested by Bob Atlas to generate more soundings around cloudy areas - hurricane studies

Plan is to do one sounding per 1x3 array of AIRS footprints

Common zenith angle - no zenith angle correction required

Three soundings produced per AMSU FOR (takes 3 x longer)

Solve for 2 values of $\eta -$ allows for up to 2 cloud formations

Smaller area may have less formations ($\approx$ 50 km x 80 km at end of scan)

QC will reject those cases where more cloud formations exist

Three sets of cloud top pressure will also be produced within AMSU FOR

Soundings over land should improve - especially at large zenith angles

Less surface variability over FOR

System currently running at GSFC

Bob Atlas also requested soundings be flagged as "good" above cloud top in overcast situations

In Version 6.0, can flag fallback cloudy regression temperatures above cloud top as good

IMPROVE OLR RTA

AIRS currently uses same OLR RTA as TOVS - more than 20 years old

      Parameterized in terms of $T(p)$, $q(p)$, $O_3(p)$

      Need newest physics - consistent with AIRS RTA

      Need to include variable CO_2, N_2O, CH_4, etc.

      CO_2 can be allowed to vary as a function of time as done to initialize AIRS soundings

         If CO_2 retrieval becomes promising, can use retrieved CO_2

         Either way, OLR calculation should be consistent with retrieval

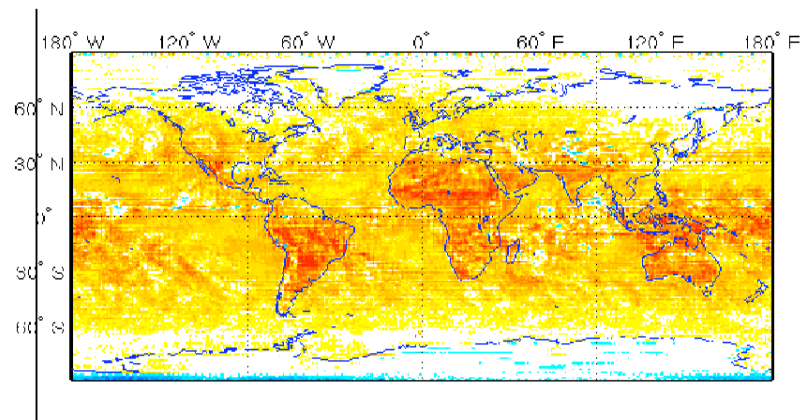Monthly mean TOVS OLR agrees better with CERES than AIRS does

      (AIRS - CERES) OLR is highly spatially correlated with (AIRS - TOVS) precipitable

         water above 850 mb (PW_{850})

      AIRS PW_{850} is much more accurate than TOVS PW_{850}

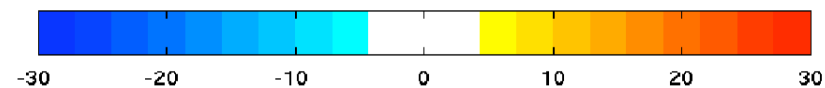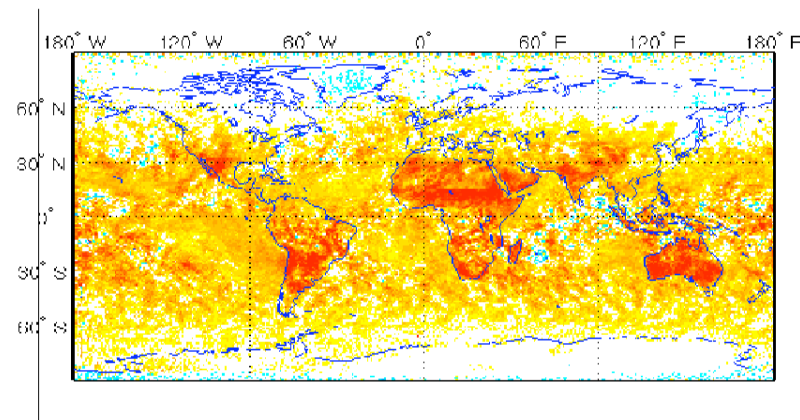   Spurious OLR result arising from errors in RTA

SRT V5.0 AIRS - CERES All-Sky OLR [W/m²] for Jan/2003
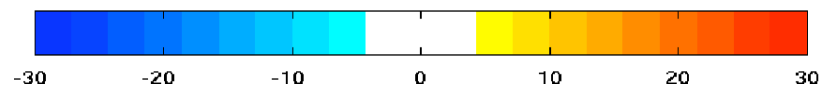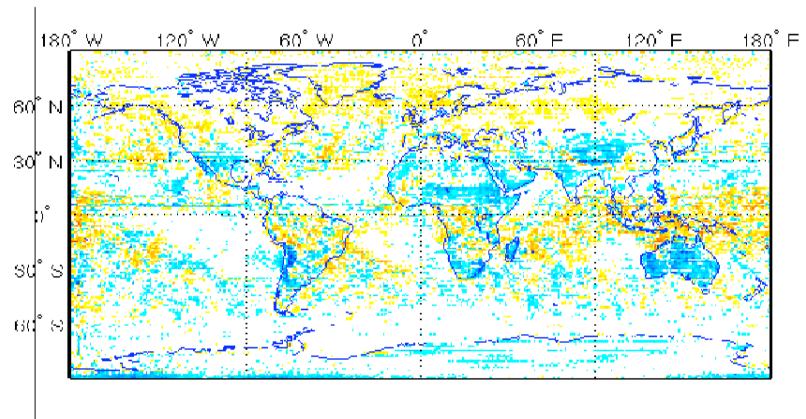Bias = 8.846 W/m²   STD = 10.59 W/m²
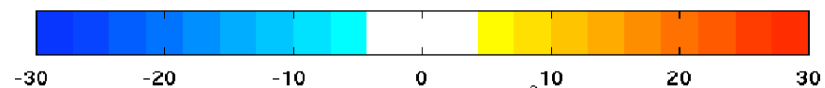
SRT V5.0 AIRS - TOVS All-Sky OLR [W/m²] for Jan/2003
Bias = 8.853 W/m²   STD = 11.37 W/m²

TOVS - CERES All-Sky OLR [W/m²] for Jan/2003
Bias = -0.0077 W/m²   STD = 5.026 W/m²

100 x (SRT V5.0 AIRS - TOVS) 850 hPa Specific Humidity [g/Kg] for Jan/2003
Bias = -10.87 g/Kg   STD = 20.88 g/Kg

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